RELEASE NOTES

Trimble® VRS³Net™ GNSS Infrastructure Software

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Release notice

This is the May 2011 release (Revision A) of the Trimble VRS\textsuperscript{3}Net GNSS Software Release Notes. It applies to version 1.4 of the software.

Product warranty information

For applicable product warranty information, please refer to the Warranty Card included with this Trimble product, or consult your Trimble dealer.
Introduction

These release notes describe new or changed features in version 1.4 of the Trimble® VRS3Net™ GNSS software compared to version 1.2. This is an important software release that adds new features and capabilities, and incorporates many requests from users.

Note – In this document, “the software” refers to the VRS3Net GNSS software version 1.4, unless specified otherwise.

Before you upgrade the software, Trimble recommends that you download and back up any user files from the existing installation.

New features

Language support

The VRS3Net software Web Application, is now available in Russian and French languages.

For more information on how to activate this during the update process, see Web Application Advanced 1.2 to Trimble VRS3Net Web Application Advanced 1.4 on a distributed server system, page 14.

Software patch mechanism

The software now offers a patch mechanism similar to Windows patches, which enables you to keep the software up-to-date. Trimble provides software patches online. The software detects and alerts when a patch is available. Two modes are available:

- Check and notify (Default setting)
- Disabled

Configure the required mode through the status bar or the system properties. Once you download a patch, it is distributed by the controllers and the DBServer to all servers of the distributed environment. The TSA installs the patch to the respective machine.

Note – To correctly distribute the patch on all machines of the distributed environment, the servers must be actively connected.

After applying the patch to the software, you must restart all services.
QZSS support

QZSS (Quasi Zenith Satellite System) improves the satellite visibility within Japan and the Australasian region.

The software decodes and stores QZSS messages from a Trimble NetR9™ receiver. The data can be stored in the Trimble T02 format. The GNSS receiver module visualizes the data.

Additional reference station receiver types support

The software now supports the following receiver types. Storage integrity is not supported for any of the receivers.

- Trimble SPS 851
- Trimble SPS 852
  These receivers can only be connected passively to the system.
- Leica GR10
  This receiver can be connected through an RTCM3 data stream. The software decodes GPS and GLONASS messages.
- Topcon NetG3A
  Data can be received either through the Topcon raw data format or the RTCM3 data stream. Trimble supports GPS and GLONASS messages of this receiver type.
- Javad Delta TRE-G3TH
  This is supported through the Javad raw data format as well as through the RTCM 3.x data format. GPS and GLONASS messages can be decoded. The Javad Delta receiver requires firmware version 3.20 or higher. To ensure that this receiver is configured correctly, actively connect it into the system, as the software needs to change some receiver default settings.

Web Application Advanced: iScope and iScope Live services

The Trimble iScope™ service is a new, optional functionality within the Web Application Advanced. This service enables you to track the currently connected logins (iScope Live) or to review the measured session of a certain login. The iScope service is based on Google Maps and requires a separate Google Maps Premier Key for which you have to pay. To obtain the Google Maps Premier Key, go to http://code.google.com/apis/maps/documentation/premier/. Enter the key on the Google Maps Key page under the Sensor Map Management section.

The iScope service offers a user information about the logins belonging to that user. The system administrator can review the information from all users and logins.

To run the iScope service, enter the NMEA distributor below the NTRIP Caster module; session tracking is based on NMEA information from a rover instrument.
Enhancements

.Net Framework 4.0

VRS³Net software 1.4 uses the new .Net Framework 4.0, which is automatically installed along with the software, if not already available on the server.

Alarm Manager

The Alarm Manager now includes the following alarms:

• Central Controller - software update available
• Network Processor - DCB files are currently not available
• Ephemeris Manager - Expected Ultra Rapid Orbits missing

The alarm action "Issue alarm sound" is no longer available in the Alarm Manager.

Note – The alarm action is set back to none, in case you configured an alarm to issue an alarm sound.

Alarms with the condition status Condition Disappears are now sent only if the alarm has actually been issued.

Antenna database

New antennas are added to the antenna database. For some Ashtech antennas, the Trimble internal Char Code and Type number have changed, which can result in a slightly different Ashtech Antenna appearing after you start the system.

Atmosphere watch: IPWV calculation

The new software offers an interface for the IPWV (Integrated Precipitable Water Vapor) calculation to apply customized algorithms instead of the standard implementation.

For more information, contact Infrastructure_Support@Trimble.com.

Azimuth-dependent elevation cutoff

The GNSS receiver module now enables you to define an azimuth-dependent elevation cutoff to improve tracking of GNSS data. In the module properties, you can graphically define the obstacles / shadowing of a reference station.

This feature is especially useful for a reference station located near a building that induces strong multipath interference. By excluding this area, ‘noisy’ satellite signals are not tracked.
**BINEX decoder**

There is a new BINEX format definition regarding the ephemeris week handling at a week roll over. Trimble adapted those changes within the receiver firmware (4.41 or later), and VRS³Net software.

The decoder in the software can handle the original and the new BINEX data format. However, to have consistent BINEX format versions available, Trimble recommends that you use consistent firmware versions on your receivers inside a VRS™ network.

**Compact RINEX generation**

Conversion of data from RINEX to compact RINEX works correctly only if the RINEX file name *does not* contain any special characters, such as å.

**Data file update**

*Automatic Update* is now renamed *Data File Update* and has new icons. The options and the settings are unchanged.

**Ephemeris download module**

The Ephemeris Download module now enables you to configure automated download of precise ephemeris files. The download settings for the predicted orbits and the DCB files are extended to allow you to select the data source of those file types. The configuration of the DCB files is now always available.

**Framework**

Some enhancements have been made to the VRS³Net framework:

- The file download icon is changed; functionality is unchanged
- Display times in reports and modules are adapted to show the time selected in the time server of the status bar
- Chart properties are extended to enable you to configure lines and point markers in a chart.

**Update frame transformation parameters**

The frame transformation parameters are updated to the latest published values. The Network Motion Engine keeps those parameters in its stored results, which may result in inconsistency after the update.

Before you update the software, delete the network motion engine results.

For more information, see *Updating the software, page 12*. 
**GNSS receiver module**

The default tracking settings for NetR3, NetR5, and NetR8 instruments are changed to automatically switch on L2C and Legacy and to disable L5.

For the NetR9 instrument, L2C, Legacy, and L5 will be activated.

**Changes on iGate protocol**

The iGate protocol no longer supports ITRF97 as an input parameter for the coordinate system.

**Multiple module insert**

If you pre-configured modules, you can now insert them all at once through a ‘multiple select’. The configurations remain as previously defined.

**New ionosphere model in network processor**

The network processor in the software is extended by a second ionosphere model, which uses DCB files to improve the information for the model. To activate the new ionosphere model, the DCB file usage must be activated in the network processor properties. If Use DCB Files is deactivated in the network processor properties, the ionosphere model from former versions is used. The DCB files download must be activated in the Ephemeris Download Module.

*Note – If the DCB files are older than two months, the Network Processor switches back to the former ionospheric model, which means, the processor will need to reset. To return to the new ionospheric model, you must manually re-enable DCB file usage in the network processor properties.*

For networks smaller than 10 stations, Trimble recommends that you use the former ionosphere model.

**NMEA distributor**

With the NMEA distributor, you can now also configure the variable “Modus”, to give the administrator the fixing status of the rover.

**NTRIP Caster**

The NTRIP caster offers better proxy support.

If you use Accounting for the NTRIP Caster, a new *Emergency Access* property is available in the system. Set this setting to Yes to allow your customers to still connect to your system in case of a database failure. No records of those connections are taken while the database is not available.
Postprocessing Engine

The Postprocessing Engine now offers the following modes for baseline processing:

- Kinematic
- Static

The properties of the kinematic processing are variable based on the input parameters. Depending on how many baselines are selected for processing, the offered session intervals can change.

Rapid Motion Engine and RTK Engine

The Rapid Motion Engine and the RTK Engine now offer a new setting in module properties to define the logging rate for the engines. If the Logging filter is activated, you can define the interval to write information into the database. Otherwise, the highest data rate is used to write to the database. If activated, the default value is 15 seconds.

Reference Data Shop module

The functionality of the Reference Data Shop module in the TDE is extended as follow:

- Concurrent file scanning
- Concurrent processing of orders

These changes provide a faster delivery of orders to the customer and faster data scanning when adding new data sources. In the module properties, you can define up to 16 jobs for file scanning and order processing.

In the context menu, select the new Generate entry to access a dialog for testing CORS and VRS file generation.

Report generator

The report generator can now produce reports with a large amount of data in a much more timely manner. This is enabled through the following changes.

**Note** – If you created your own reports based on the former XML files, you will not see these changes.

- Added a setting to the different engines to define the logging rate for the engine. See Rapid Motion Engine and RTK Engine, page 8.
- Adaptation of the XML files to better access data inside the database
- Improvement to the actual report generator
- New structures to the VRS³Net databases

The new database structures are automatically adapted with the new version of the software. See Updating the software, page 12.
The report generator now also provides a progress bar and additional information to show the progress of report generation (and reports in queue), and a Cancel button to recall generation of a certain report.

The following additional reports are available:

- Export Current Reference Coordinates
- Export Monitored Coordinates
- Post Processing Engine Integrity Management Report
- Revenue Report
- RTO Connection Details Report

**RTCM data format extension**

The software supports the latest released expansion of the RTCM 3.1 Amendment 4 (GLONASS network RTK corrections). The network processor and the RTO module are changed to now also process and stream the latest released GLONASS messages for the Master Auxiliary Concept (RTCM3Net).

**RTO module: Antenna settings**

The RTO module in VRS³Net software 1.2 introduced the IGS conform name "ADVNullAntenna NONE" to be streamed out through RTCM. In the RTO module, you can select to stream this IGS conforming name or the antenna information "ADVNullAntenna" without any Dome information.

Trimble recommends checking with your rover provider to verify and confirm the compatibility with the field equipment that you use. Trimble rover systems running on older firmware version 4.14 should use the antenna information "ADVNullAntenna" without the Dome information.
Web Application Advanced

<table>
<thead>
<tr>
<th>Web Page</th>
<th>Description</th>
</tr>
</thead>
</table>
| Atmospheric Conditions           | This section now also offers an animation for TEC values calculated within the Atmosphere Watch module. The animation is offered for the two time intervals:  
• last 8 hours  
• last 24 hours |
| Network Information pages       | In the web pages I95 Index and IRIM/GRIM, you can now select the time to be presented in the graphs.                                                                                                           |
| User Management and Accounting pages | The user management accounting and subscription pages now include the following improvements:  
• Buttons are replaced by icons: Each icon includes a descriptive tool tip.  
• You can sort tables by clicking the column header: To sort by multiple columns, hold down the [SHIFT] key as you click the headers.  
• A new search function for users, logins, organizations, and subscriptions: This replaces the drop-down lists for filtering organization/user/login.  
• The User Management page is now more clearly arranged. By default, the logins are hidden: To show them, click the “+” icon next to the user. |
| Redundancy Management (Administrators only) | This new web page enables administrators to handle the redundancy concept for the following modules:  
• Reference Data Shop  
• Sensor Map  
• Report Generator  
The source for the redundant modules and applications can be added here.  
The reference Data Shop and Sensor map will talk to two redundant TDEs. |
| Services Management (Administrators only) | This new web page enables administrators to activate or deactivate services that are available in the web application of the navigation bar.  
**Note** – To disable the Sensor map for users who are not logged on to the web application, refer to the Google License page to confirm that you have an appropriate license to run the sensor map only behind the login. |
| Subscription Management (Administrators only) | Extended subscription information enables an administrator to add custom fields to subscriptions and then associate each field with a specific value on the Create Subscription page. |
| Reference Data Shop               | The Reference Data Shop now also offers RINEX 2.10 as an output format for the delivery of orders.                                                                                                          |

**Note – Compatibility with Internet Explorer 9:** If you use the Internet Explorer 9 browser to open the Web Application Advanced Compatibility, make sure that View (in the Internet Explorer Tools menu), is activated to correctly show the content of the web application.

**Licensing and protection**

The new version of the software requires a new license. Due to changes in the protection scheme, the new licenses are no longer backwards compatible.
**Supported operating systems and SQL Server**

VRS³Net software 1.4 supports the following operating systems:

- Windows 2003 SQL Server x86
- Windows 2008 Server x64
- Windows 2008 Server R2
- Windows 7 Professional x64

*Note – The Web Application Basic / Advanced require Microsoft IIS. The software supports IIS 6.0 or higher.*

The installation DVD now includes installation of the Microsoft SQL Server 2008 R2 Express. Microsoft SQL Server 2005 Express and Microsoft SQL Server 2008 Express are also supported.

If you are already running a system with Microsoft SQL Server 2005, you can retain this database.

If you consider building a bigger network with more processing engines, Trimble highly recommends upgrading from the SQL Express version to a full SQL installation (versions 2005 SP1 and higher are supported).

For a new installation of the Microsoft SQL Server 2008 R2 Express, refer to the User Guide on the installation DVD.

If you want to update your existing Microsoft SQL Server 2005 Express to the Microsoft SQL Server 2008 R2 Express, you can migrate the databases. For more information, contact Trimble Support; email Infrastructure_Support@Trimble.com.

*Note – Trimble strongly recommends the use of a 64-bit operating system to achieve maximum software operating potential.*

**Minimum system requirements**

*Note – System requirements depend on the size of the network and the configuration of the different modules. Trimble recommends that you contact Trimble support (email Infrastructure_Support@Trimble.com) to optimize the system requirements for your planned application.*

- Processors: One of the following, all of which support SSE2 (for example, Intel Pentium 4 or later):
  - Dual processor, at least at 3.0 GHz
  - Dual core processor, at least at 2 GHz
  - Quad core processor
- 4 GB RAM
- USB port
- Free space on the local C:\ drive of at least 40 GB for the VRS³Net DBServer
• A further 40 GB on your hard disk (depending on the number of stations and the amount of data to be archived)
• A 100 Mb communication link between computers running the Trimble Distributed Environment (TDE).
• A 10 Mb communication link between computers running TDE and computers running the VRS³Net UI.
• Read / write access rights to the registry on any computer running TDE or the VRS³Net DBServer.

Updating the software

Single server system

1. Create a backup of all important system data and all files that have been manually edited. For example:
   – Registry of VRS³Net installation;
   – Database
   – DBServer.exe.config
   – Contracts.xml
   – Customized emails (<Install Directory Trimble VRS³Net>/DBServer/Email). Existing emails are not changed; new emails are added to the system
   – Customized Reports (<Install Directory Trimble VRS³Net>/DBServer/Reports)
2. Click Start / Control Panel / Add or Remove Programs and then remove Trimble VRS³Net. When prompted to keep the database, click Yes.
3. Open Windows Explorer. If required, manually delete any remaining dll files that were added to the system.
   To prevent any inconsistency in applying the newly added frame transformation parameters, delete the files NetworkMotionEngine*.dat in the folder <VRS³Net install Dir>\Container.
4. Start installing the software from the installation splash screen. Follow the installation wizard.
   During installation, the database is automatically updated, including structural changes.
   Note – During the installation, the wizard prompts you to install the .Net Framework 4.0, in case this is not yet available on the server. Click Install to start the installation.
5. Once installation is complete, you are prompted to start services. Click No.
6. Apply necessary changes to the DBServer.config.exe (Section <App settings>): *Do not* copy the old file across as the content of the file has changed.

7. Update your license on your dongle with the Trimble License Activator tool: Click *Start / All Programs / Trimble Infrastructure / Trimble VRSNet.*

8. Start VRS³Net services in the Trimble Service Administrator. The last used configuration will start automatically.

   When starting DBServer for the first time, database changes are applied. Depending on the size of the accounting database and the server hardware, this may take 30 minutes or longer. During this time, the TSA shows DBServer as not running, while the VRS³Net UI shows a green icon (connecting to the DB). Status in the Windows Services overview shows, that DBServer is “starting”.

9. Start the UI and re-activate the Tree View and Status Message view.

10. Due to changes in the antenna database, ensure that the selected antennas in your installation are valid—you may need to manually select the antennas.

**Distributed server system**

1. Follow *Step 1 through Step 5 in Single server system* above for each of the servers used in the distributed environment.

   Back up the registry on each server, as the configuration details are distributed on the different registries on the different servers.

2. Apply necessary changes to the DBServer.config.exe: *Do not* copy the old file across as the content of the file has changed.

3. Update your license on your dongle with the Trimble License Activator tool: Click *Start / All Programs / Trimble Infrastructure / Trimble VRSNet.*

4. Start the VRS³Net services in the Trimble Service Administrator on each server, beginning with the master servers. The last used configuration will start automatically.

   When starting DBServer for the first time, database changes are applied. Depending on the size of the accounting database and the server hardware, this may take 30 minutes or longer. During this time, the TSA shows DBServer as not running, while the VRS³Net UI shows a green icon (connecting to the DB). Status in the Windows Services overview shows, that DBServer is “starting”.

5. Start the UI and re-activate the Tree View and Status Message view.

6. Due to changes in the antenna database, ensure that the selected antennas in your installation are valid—you may need to manually select the antennas.
Web Application Advanced 1.2 to Trimble VRS³Net Web Application Advanced 1.4 on a distributed server system

For this update, some manual actions are required. There is no automated process to apply changes that the system administrator has manually added to the system.

1. Back up the complete installation directory of your current Web Application Advanced.
2. Click Start / Control Panel / Add or Remove Programs and then delete Trimble Web Application Advanced.
3. Open Windows Explorer. If required, manually delete any remaining dll files that were added to the system.
4. Start installing Web Application Advanced: Follow the installation wizard.
5. To correctly apply all changes, restart your DBServer service through the Trimble Service Administrator.
6. Go to the Web Application Advanced installation directory and then re-apply any customizations from the previous installation. Manual changes could include:
   - Layout.css
   - *.sitemap and site.master
   - AppSettingsAdvanced.config
   - App_GlobalResources\*.resx
   - CustomConfig\*.config
7. Start the Web Application to check the final installation.
8. Go to the newly added administration pages to configure services and redundancy modules.
9. In the updated system, the newly added languages Russian and French do not appear automatically. If you need to activate those languages, go to the Language Management page in the web application and then add the language(s) with the following settings:

<table>
<thead>
<tr>
<th>Language codes</th>
<th>Native language name</th>
<th>URL to flag icon</th>
</tr>
</thead>
<tbody>
<tr>
<td>fr-FR</td>
<td>Français</td>
<td>FlagFrance.gif</td>
</tr>
<tr>
<td>ru-RU</td>
<td>Русский</td>
<td>FlagRussia.gif</td>
</tr>
</tbody>
</table>

This applies to the Web Application Basic and to the Web Application Advanced.
Trimble VRS³Net Web Application Basic 1.2 to Trimble VRS³Net Web Application Basic 1.4 on a distributed server system

1. Follow the steps in the previous section.
2. You probably have not applied any changes to the master page or the layout of the website, so once the installation is complete, you need only to check the file AppSettingsBasic.config.